Abstracts

GaAs HBT MMIC Broadband Amplifiers from DC to 20 GHz

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Three monolithic wideband and high gain amplifiers implemented with 2-3 µm GaAs heterojunction bipolar transistor (HBT) MMIC technology are presented. A single-stage direct-coupled amplifier achieves a 3-dB bandwidth from dc to 20 GHz, believed to be the widest bandwidth reported for direct-coupled amplifiers. The amplifier has a 6 dB nominal gain with a peak gain of 7.3 dB at 10 GHz. The 1-dB compression is 10 dBm at midband and the noise figure is between 7 and 10 dB over the bandwidth. A two-stage version of this amplifier achieves 14.5 dB gain up to 12 GHz. Its output power and noise performance is comparable to the single-stage version. The third wide band amplifier design is based on passive component and microstrip matching circuitry. The matched amplifier has 14.5dB nominal gain with a 3-dB bandwidth from 5 to 12 GHz.

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